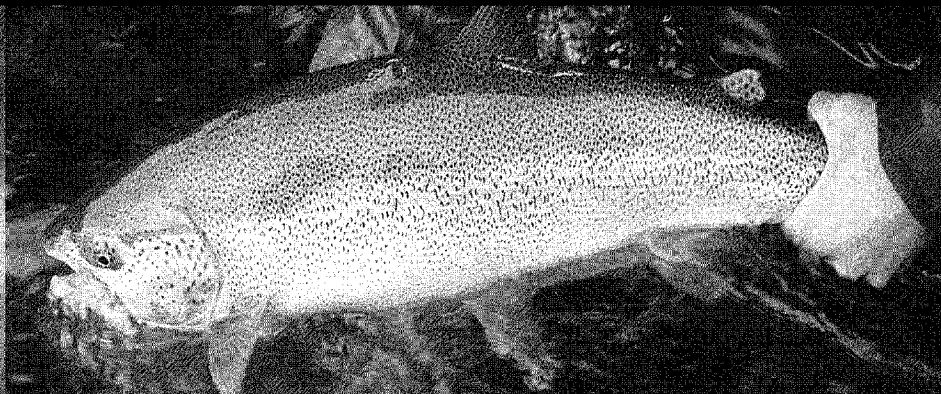
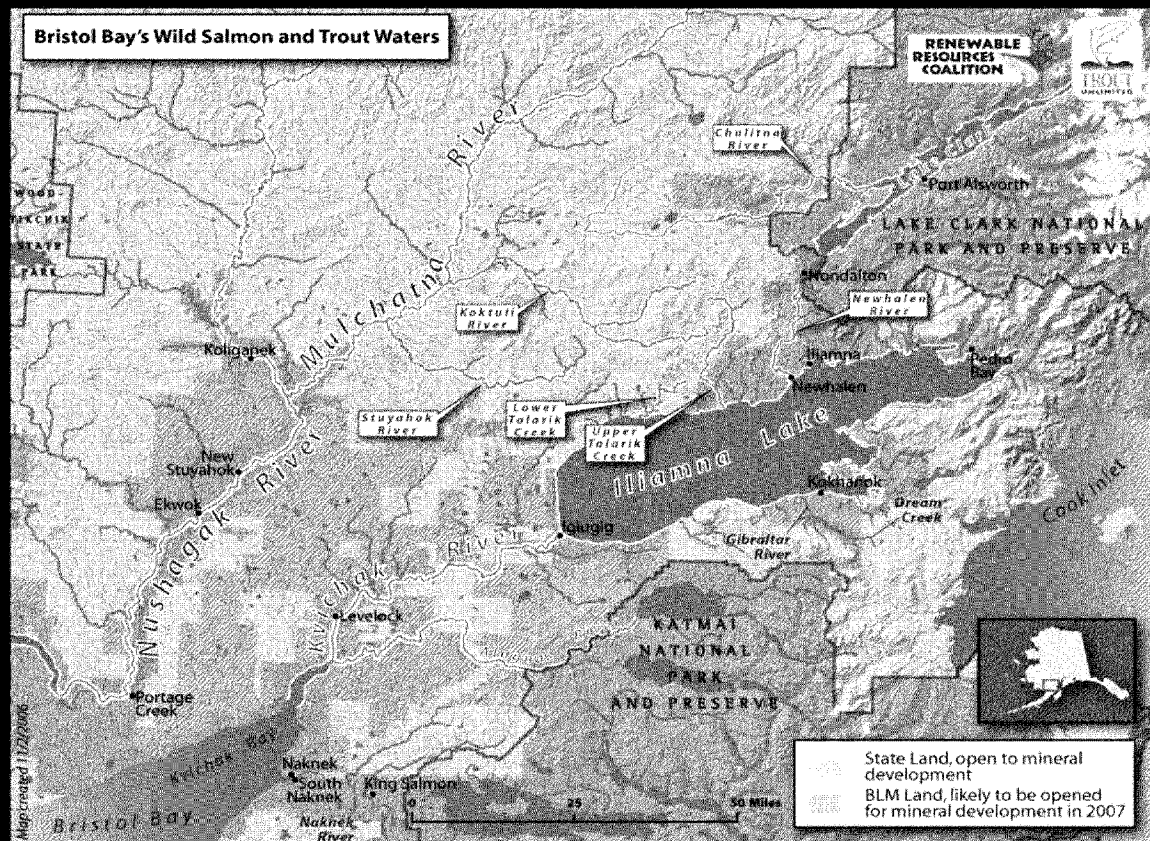


The Case for Protecting Bristol Bay, Alaska



EPA-7609-0005111-0001

Where is Bristol Bay, Alaska?



Salmon Stronghold

- Estimated 30 – 40 Million Sockeye, as high as 50 million
- Kvichak River is the most productive salmon watershed in the world
- Over 60% of of North American Sockeye from Bristol Bay
- Over 50% of global salmon come from Nushagak and Kvichak Rivers
- Supports subsistence, commercial, and sport fisheries for total of \$450 million annual revenue

Sockeye Spawning Abundance
Average Annual Total Return

10 - 100
100 - 1,000
1,000 - 10,000
10,000 - 100,000
100,000 - 1,000,000
1,000,000 - 10,000,000

Bristol Bay & Alaska Peninsula

Source:
Sockeye salmon data for 1983 - 1998 were compiled by the U.S. Forest Service, Alaska Division, and the Alaska Department of Fish and Game. The data represent the average annual total return of the sockeye salmon.

Ministry of the
STATE OF THE SALMON
Alaska 1998-1999

Logo of the Governor is a
certification of the quality of
the sock salmon caught

U.S. Forest Service

Subsistence Fishing



“For at least 9,000 years, the region’s life giving renewable resources have supported indigenous Yu’pik, Aleut, and Dena’ina people, whose cultural identities significantly revolve around the annual migrations of salmon.”
(Snyder, *Fishing in Bristol Bay*, 2010).

-7600 subsistence users

-2.4 million pounds of subsistence harvest

-Net economic value between \$80 and \$140 million annually

Commercial Fishing



- Dates back to 1880s
- Employs over 6500 people annually
- \$368 million annually into regional economy
- Avg Annual Harvest of sockeye - 24 million

Sport Fishing

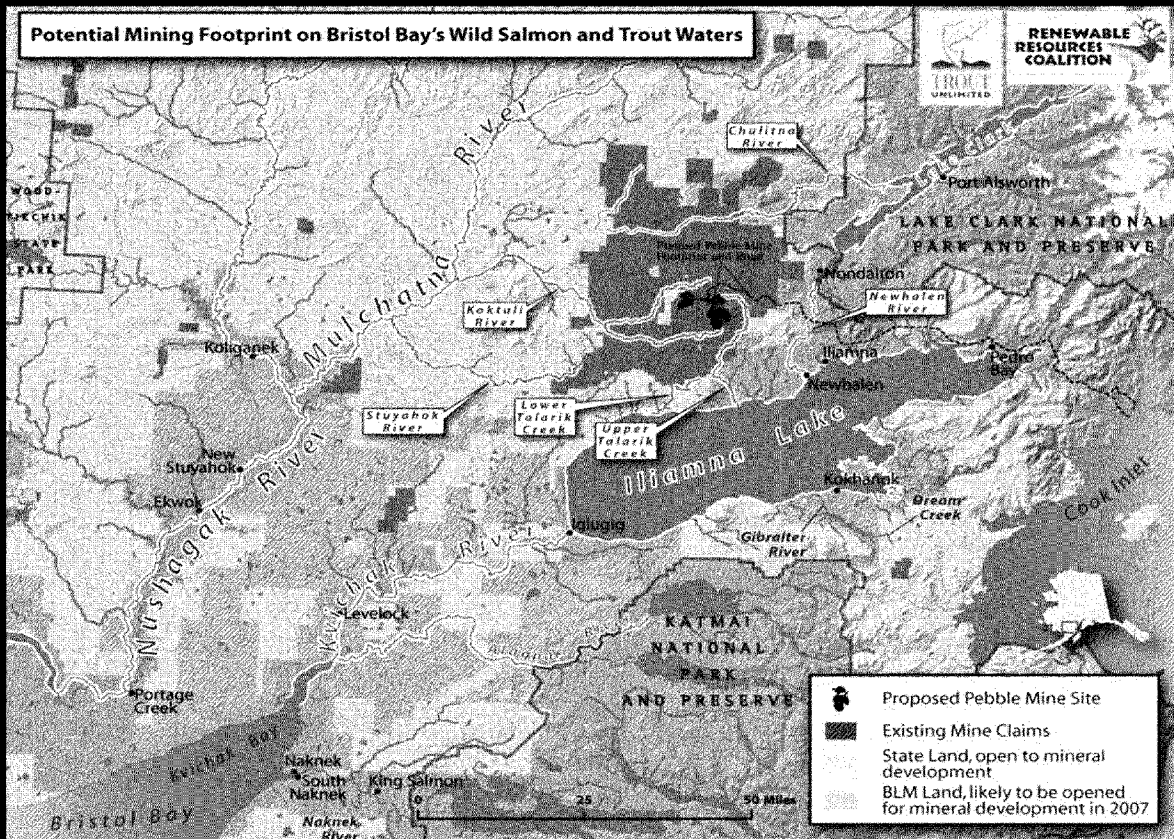


- Dates back to the 1950s and the leadership of Ray Peterson (Father of Alaskan Sports Lodge)
- 51,000 annual recreational trips
- \$166 million dollars, half of which is spent by non-resident anglers
- Wildlife viewing accounts for \$18 million annually to state economy

Ecosystem Values



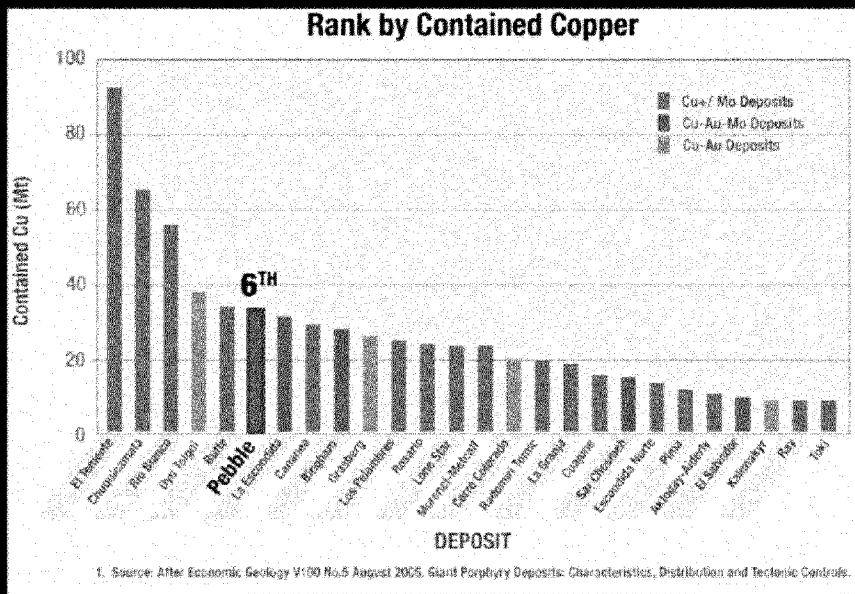
Pebble Mine



Copper, Gold, and Molybdenum



World's most important porphyry deposits¹



Norbert Dynasty Minerals Ltd.

The Future of U.S. Mining and Metals

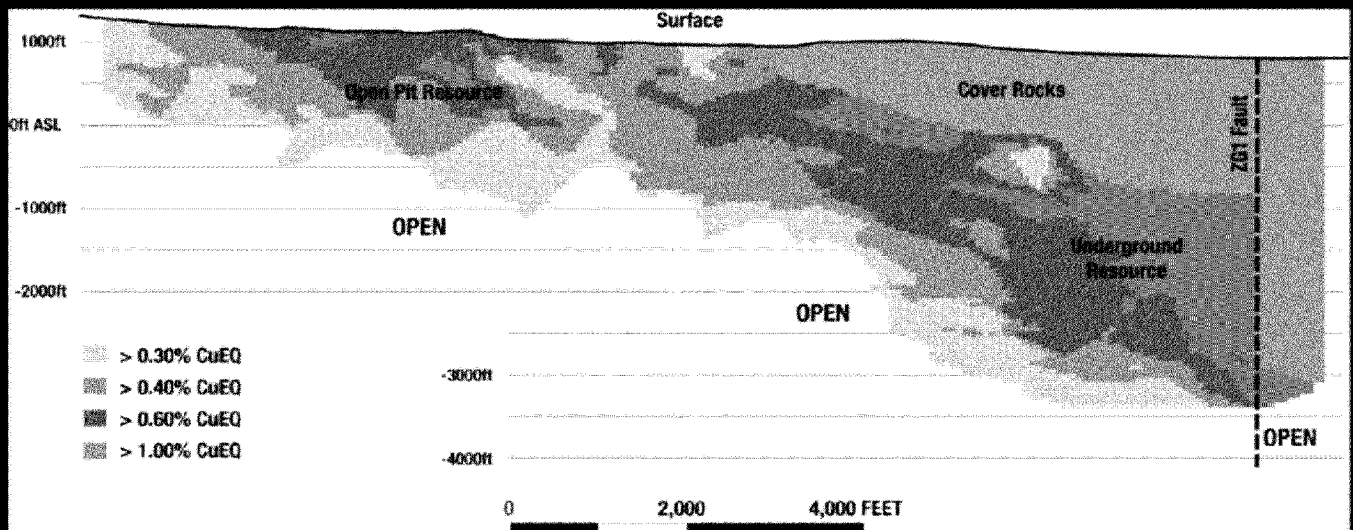
EPA-7609-0005111-0010

Size

- North America's largest open pit mine (2nd Largest in the World)
 - Two mines
 - Pebble West – 2000 ft deep and 2 square miles
 - Pebble East – 5000 ft deep and 2 square miles
- 10.78 billion tons of waste (based on estimates from PLP given to investors)
- Low-grade deposit – less than 1% mineral per weight of ore
- Dam(s) for tailings pond:
 - Estimate 740 feet tall
 - 4 miles long
- 2006 Water Permits requested water from 60 miles of North and South Kaktuli Rivers (at headwaters)



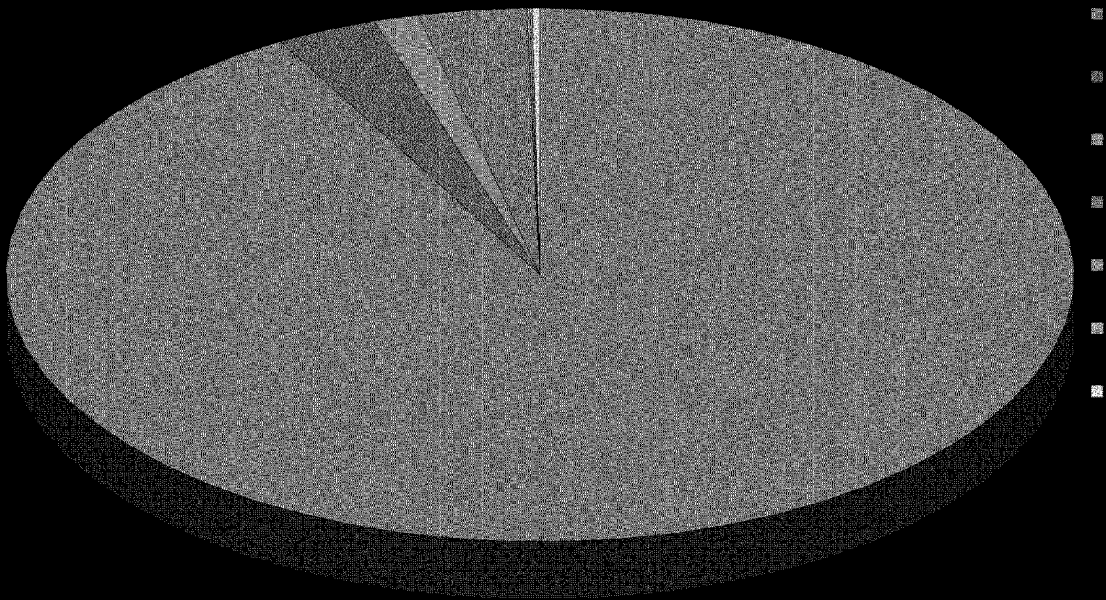
Volume, grades & metallurgy to support a long-life, high volume open-pit and underground mine

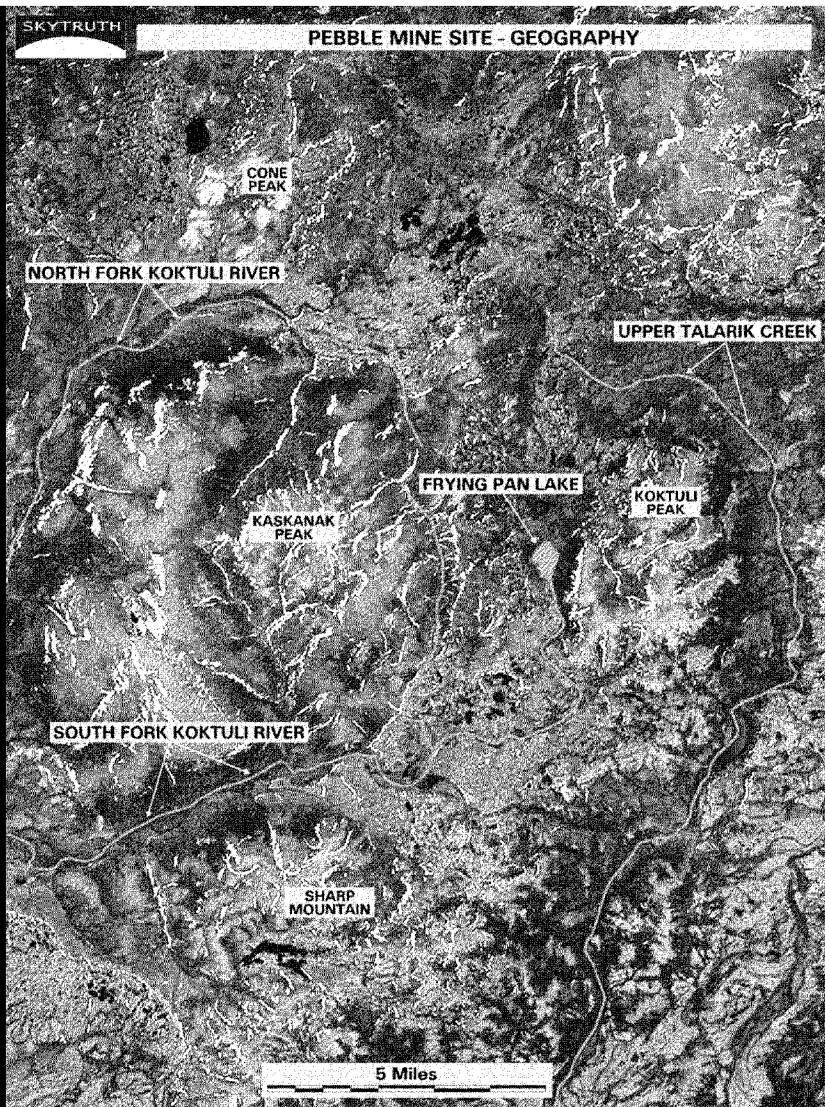


Northern Dynasty Minerals Ltd.

The Future of U.S. Mining and Metals

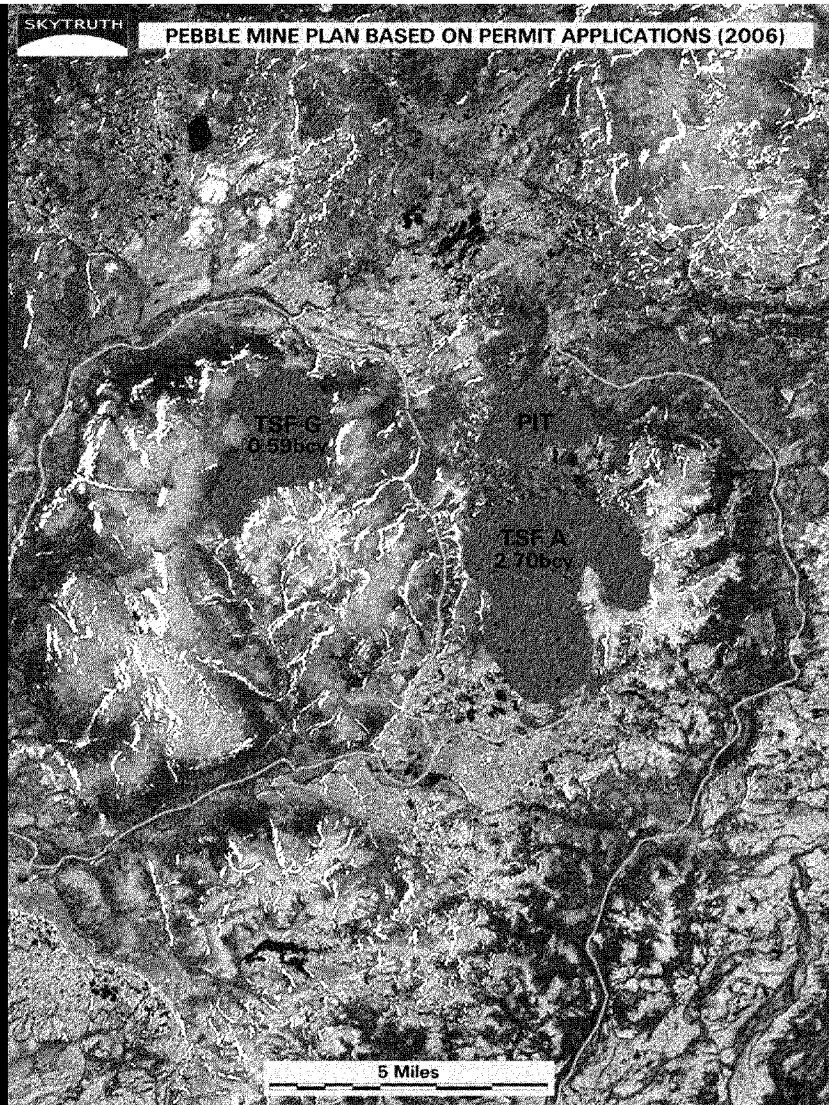
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SKYTRUTH

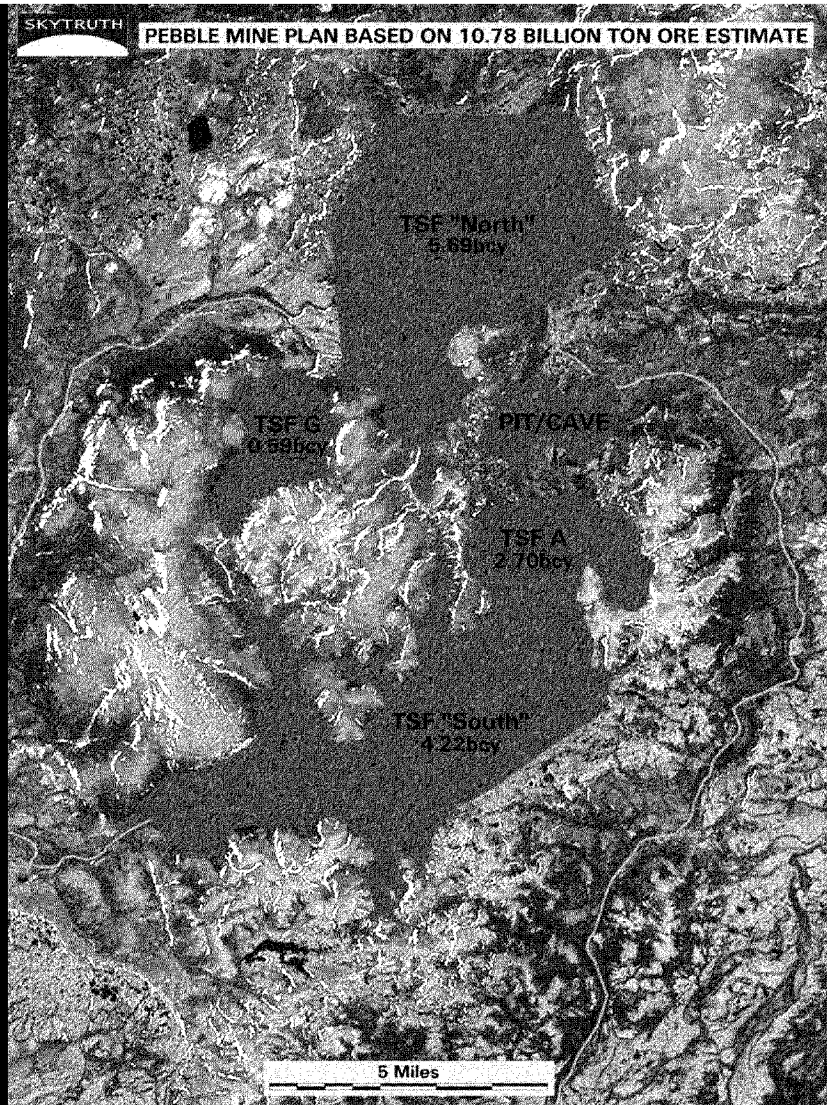
PEBBLE MINE PLAN BASED ON PERMIT APPLICATIONS (2006)



EPA-7609-0005111-0015

SKYTRUTH

PEBBLE MINE PLAN BASED ON 10.78 BILLION TON ORE ESTIMATE



SKYTRUTH

PEBBLE MINE PLAN SUPERIMPOSED ON ANCHORAGE
BASED ON 10.78 BILLION TON ORE ESTIMATE



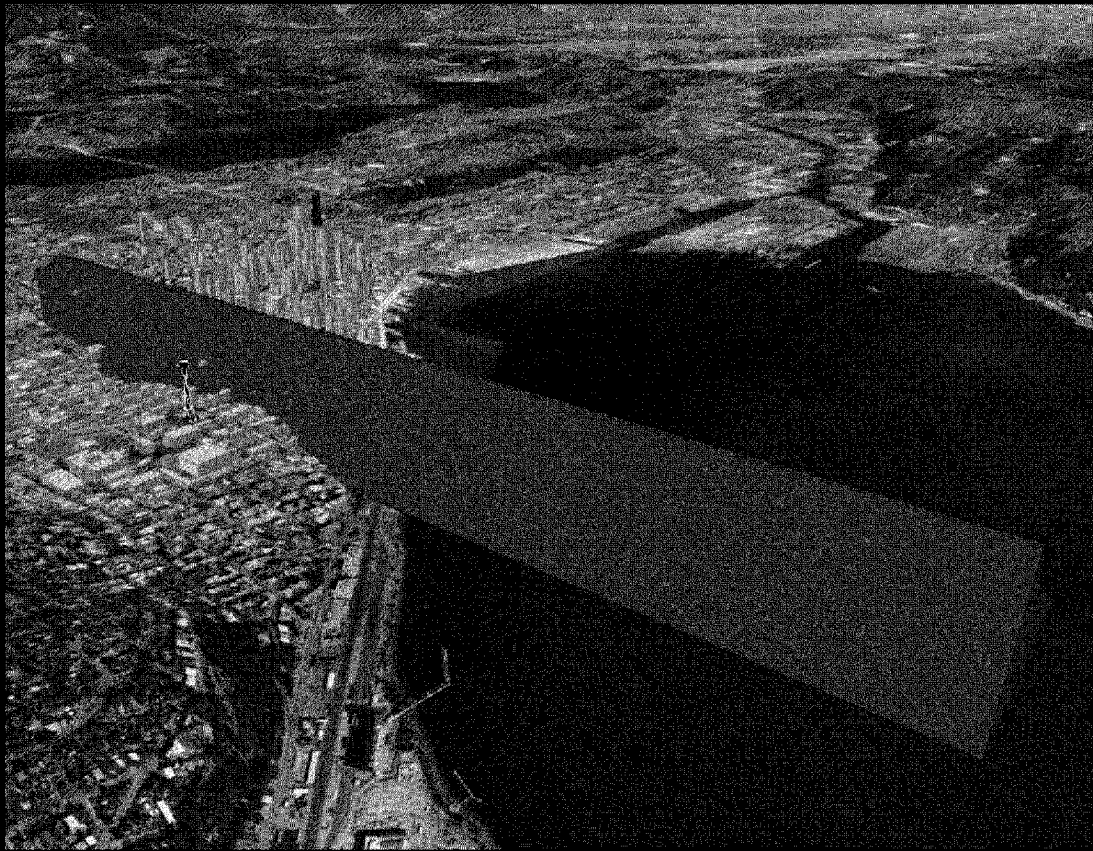
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Comparisons: Bingham Canyon Mine



EPA-7609-0005111-0018

Comparisons: Dam on Seattle

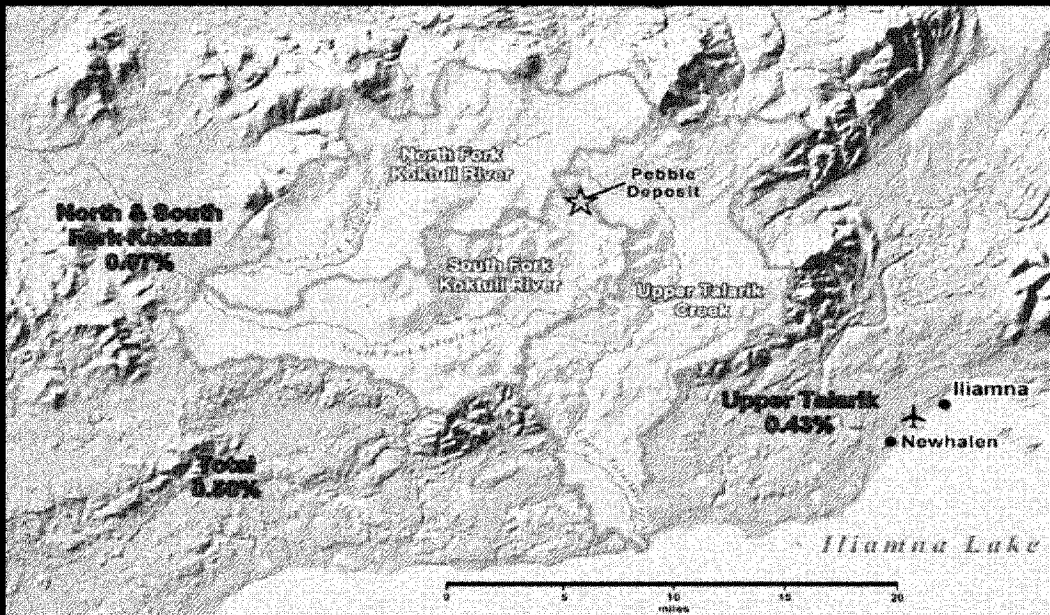


Threats: Water Use



Pebble will maintain the productive capacity in local river systems

Project will have no impact on the North Fork Kokoi River, South Fork Kokoi River, Upper Talarik Creek, or Iliamna Lake.



Northern Dynasty Minerals Ltd.

The Future of U.S. Mining and Metals

EPA-7609-0005111-0020

Threats: Copper

SCIENCE NEWS

hibernation
aspirin de
brain damage pr
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AQUATIC NON-SCENTS

Repercussions of water pollutants that nuzzle smell

Pollution is a problem, but the way that fish smell it may be the real danger. The field of olfaction, the sense of smell, is a relatively new science, and it's one that's been largely ignored by researchers studying the effects of pollutants on aquatic life.

But now, a team of researchers from the University of Washington and the University of California, Berkeley, has shown that fish can detect and respond to pollutants in the water, even at very low concentrations.

The researchers found that fish can detect and respond to pollutants in the water, even at very low concentrations. This is a significant finding because it shows that fish are not just passive victims of pollution, but active participants in the process.

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PHOTO BY JEFFREY M. HARRIS FOR SCIENCE NEWS

POLLUTION IMPAIRS OLFACTION

POLLUTION IMPAIRS OLFACTION

Increases in dissolved copper between 2 and 10 parts per billion above normal levels in water impair salmonid olfactory senses.

Threats: Acid Mine Drainage



Sulfide Minerals + Oxygen + Water = AMD
Metal Ion + Sulfur
(FeS, CuS, ZnS, ...)



Pyrite + Oxygen + Water = Sulfuric Acid + Ferric Hydroxide
(orange)

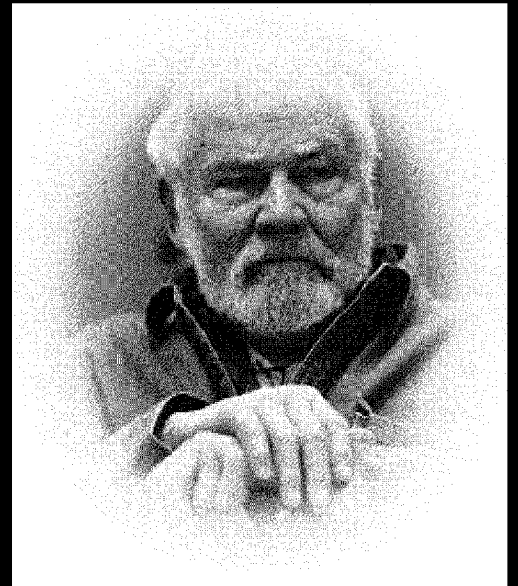
1 part per billion ↔ 1 penny in \$10 million worth of pennies

Talking Points

- Size
 - No Mine has ever been built of this size in North America
- Type
 - No mine of this type has ever been built cleanly or safely (e.g. of 25 mine surveyed 93% of mines located in high ground water exceeded water quality standards . . . and 75% failed mitigation) [Kulpers and Maest 2007]
- Location
 - Aquatic region
 - Vital Salmon habitat
 - Seismic activity
- Local Opposition
 - 80 % of Bristol Bay residents oppose the mine
 - 56% of Alaskans oppose the mine
- Economics and Jobs
 - Compare earlier data with Pebble's proposed 2000 jobs (600 of which would go to Alaskans and 153 of which would go to Bristol Bay residents)

Standards of Evaluation

- 1. Is it environmentally sound?
- 2. Can it pay its own way?
- 3. Do the majority of Alaskans desire the project?
- 4. Will it contribute something to the Permanent Fund?



What You Can Do?

Go On the Record As Opposed

Write to the Governor, Legislators, and
Media.

Support those groups engaged in the issue:

www.savebristolbay.org

www.renewableresourcescoalition.org

www.nunamta.org